The University of Southern Queensland

Course specification

This version produced 20 Dec 2007.
The current and official versions of the course specifications are available on the web at <http://www.usq.edu.au/coursespecification/current>.
Please consult the web for updates that may occur during the year.

<table>
<thead>
<tr>
<th>Description: XML and Semantic Web Services</th>
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<tbody>
<tr>
<td>Subject</td>
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<tr>
<td>CSC</td>
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</table>

**Academic group:** FOSCI
**Academic org:** FOS003
**Student contribution band:** 2
**ASCED code:** 020199

**STAFFING**
Examiner: Stijn Dekeyser
Moderator: Michael de Raadt

**OTHER REQUISITES**
Recommended Pre-requisite: CSC3400 and CSC2406

**RATIONALE**
Although based on established technology such as SGML, XML is still a rather young technology. Even so, in a very short time span it has found acceptance in a wide field of computer applications. Where one of the original reasons for the emergence of XML was exchange of data, specifically in the context of the Internet, today XML is central in topics such as web content management and delivery, document authoring and exchange, development of mark-up languages for anything from chemicals to user interfaces, and data management, integration and exchange. Furthermore, it is the basis for the ongoing development of the web, both in Web Services, and the Semantic Web. This course looks at XML from all these perspectives, and aims to develop a basis for students to consider this new technology, and of its related tools, in as open a mind as possible, while also looking at its shortcomings.

**SYNOPSIS**
This course starts with looking at XML from the perspective of data management. As such, we look at the semi-structured data model and contrast it with the relational data model and unstructured data. Then we briefly look at XML from the perspective of document languages, by comparing it to SGML and HTML. In the second module we look at two schema definition languages which enable us to check the validity of XML documents. Next we look at using XML within programming languages, by discussing two parsing techniques for documents. The fourth module studies two query languages widely used in XML tools, namely XPath and XSLT. The latter is contrasted to XQuery in the next module, which looks at native XML databases. Module 6 gives an overview of a selection of markup languages based on XML. Finally, we look at two emerging web developments: Web Services and the Semantic Web, studying such standards as SOAP and RDF. The assessment for this postgraduate course consists of a project to be set in consultation with the
examiner. Note that students who have completed CSC3419 XML and the Web may not enrol in this course.

OBJECTIVES
On successful completion of this course students will be able to:

1. understand and contrast the semi-structured data model with the relational data model and unstructured data; (All Assessments)
2. create well-formed XML documents; (All Assessments)
3. create DTDs and simple Schemas, and check validity of XML documents with respect to these schemas; (All Assessments)
4. understand and contrast DOM and SAX parsers; (All Assessments)
5. translate English language query statements to XPath and XQuery expressions; (All Assessments)
6. author XSLT style sheets to transform documents into XHTML and other markup languages; (All Assessments)
7. understand the use and challenges of XML-based databases; (All Assessments)
8. have some knowledge of assorted markup languages; (All Assessments)
9. understand and use the concepts behind web services and the Semantic Web. (All Assessments)

TOPICS

<table>
<thead>
<tr>
<th>Description</th>
<th>Weighting (%)</th>
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<tr>
<td>Semi-structured data and XML</td>
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<tr>
<td>Schema Languages for XML</td>
<td>15.00</td>
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<tr>
<td>Parsing with SAX and DOM</td>
<td>10.00</td>
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<tr>
<td>XML Transformations</td>
<td>15.00</td>
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<tr>
<td>Markup Languages</td>
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<tr>
<td>Native XML Databases</td>
<td>10.00</td>
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<tr>
<td>Web Services and Semantic Web</td>
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TEXT and MATERIALS required to be PURCHASED or ACCESSED

ALL textbooks and materials are available for purchase from USQ BOOKSHOP (unless otherwise stated). Orders may be placed via secure internet, free fax 1800642453, phone 07 46312742 (within Australia), or mail. Overseas students should fax +61 7 46311743, or phone +61 7 46312742. For costs, further details, and internet ordering, use the 'Textbook Search' facility at http://bookshop.usq.edu.au click 'Semester', then enter your 'Course Code' (no spaces).

Semester 1, Department of Mathematics and Computing DVDROM SET, 2006 (available from the USQ Bookshop). This DVD set contains Semester 1 course material, and Windows software relevant to this course. For more information about the DVD sets and their use, please refer to http://www.sci.usq.edu.au/dvrom and the course web site.

REFERENCE MATERIALS

Reference materials are materials that, if accessed by students, may improve their knowledge and understanding of the material in the course and enrich their learning experience.


STUDENT WORKLOAD REQUIREMENTS

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>HOURS</th>
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<tbody>
<tr>
<td>Assignments</td>
<td>58.00</td>
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<tr>
<td>Private Study</td>
<td>99.00</td>
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ASSESSMENT DETAILS

<table>
<thead>
<tr>
<th>Description</th>
<th>Marks out of</th>
<th>Wtg(%)</th>
<th>Due date</th>
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<tbody>
<tr>
<td>PROJECT PROPOSAL</td>
<td>30.00</td>
<td>0.00</td>
<td>10 Aug 2007</td>
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<tr>
<td>PROJECT REPORT</td>
<td>70.00</td>
<td>100.00</td>
<td>02 Nov 2007</td>
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IMPORTANT ASSESSMENT INFORMATION

1 Attendance requirements:
   There are no attendance requirements for this course. However, it is the students' responsibility to study all material provided to them or required to be accessed by them to maximise their chance of meeting the objectives of the course and to be informed of course-related activities and administration.

2 Requirements for students to complete each assessment item satisfactorily:
   To complete each of the assessment items satisfactorily, students must obtain at least 50% of the marks available for each assessment item.

3 Penalties for late submission of required work:
   If students submit assignments after the due date without prior approval then a penalty of 5% of the total marks available for the assignment will apply for each working day late.

4 Requirements for student to be awarded a passing grade in the course:
   To be assured of receiving a passing grade a student must achieve at least 50% of the total weighted marks available for the course.

5 Method used to combine assessment results to attain final grade:
The final grades for students will be assigned on the basis of the aggregate of the weighted marks obtained for each of the summative assessment items in the course.

6 Examination information:
   There is no examination in this course.

7 Examination period when Deferred/Supplementary examinations will be held:
   As there are no examinations in this course, there will be no deferred or supplementary examinations.

8 University Regulations:
   Students should read USQ Regulations 5.1 Definitions, 5.6. Assessment, and 5.10 Academic Misconduct for further information and to avoid actions which might contravene University Regulations. These regulations can be found at the URL http://www.usq.edu.au/corporateservices/calendar/part5.htm or in the current USQ Handbook.